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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Xiao-Dong Li et al. **Examiner**: Sujatha R. Sharma
Serial No: 09/708,782 **Art Group**: 2684
Filing Date: November 8, 2000 **Docket No**: 13215ROUS01U
Title: APPARATUS AND METHOD FOR SUPPORTING DIFFERENTIATED PACKET DATA SERVICES WITHIN A WIRELESS NETWORK

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REPLY BRIEF

In accordance with a Notice of Appeal filed on October 12, 2004, Applicants submitted an Appeal Brief on December 13, 2005. An Examiner's Answer was mailed March 11, 2005. This Reply Brief addresses issues raised in the Examiner's Answer. The format of this Appellant's Brief complies with Rules of Practice Before the Board of Patent Appeals and Interferences (Final Rule), 69 Fed. Reg. 49959 (August 12, 2004), effective September 13, 2004. The undersigned Attorney believes that no fees are due with this filing. However, if fees are due, please charge deposit account number 50-2126 for such fees.

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A. Real Party in Interest

All rights to the above referenced patent application have been assigned to:

Nortel Networks Limited
2351 Boulevard Alfred-Nobel
St. Laurent, Quebec
Canada, H4S 2A9

B. Related Appeals and Interferences

There are no known other appeals or interferences that would directly or indirectly affect the Board's decision in the present appeal.

C. Status of the Claims

Claims 1-46 are pending. Claims 1-13 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Willars (U.S. Patent No. 6,507,567) in view of Garner (U.S. Patent No. 6,542,739). While not explicitly stated in the Final Office Action mailed July 12, 2004, Applicants infer that claims 14-29 and 42-44 also stand rejected over Garner in view of Willars. Claims 30-41 and 45-46 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Willars (U.S. Patent No. 6,507,567) and Garner (U.S. Patent No. 6,542,739) in view of Einola et al. (U.S. Patent No. 6,438,370, "Einola").

D. Summary of claimed subject matter

All pending claims are directed to the servicing of packet data communications by a wireless network.

Independent claims 1, 14, 30, 35, 42, 45 and 46

The elements of independent claim 1 are illustrated in FIG. 1.

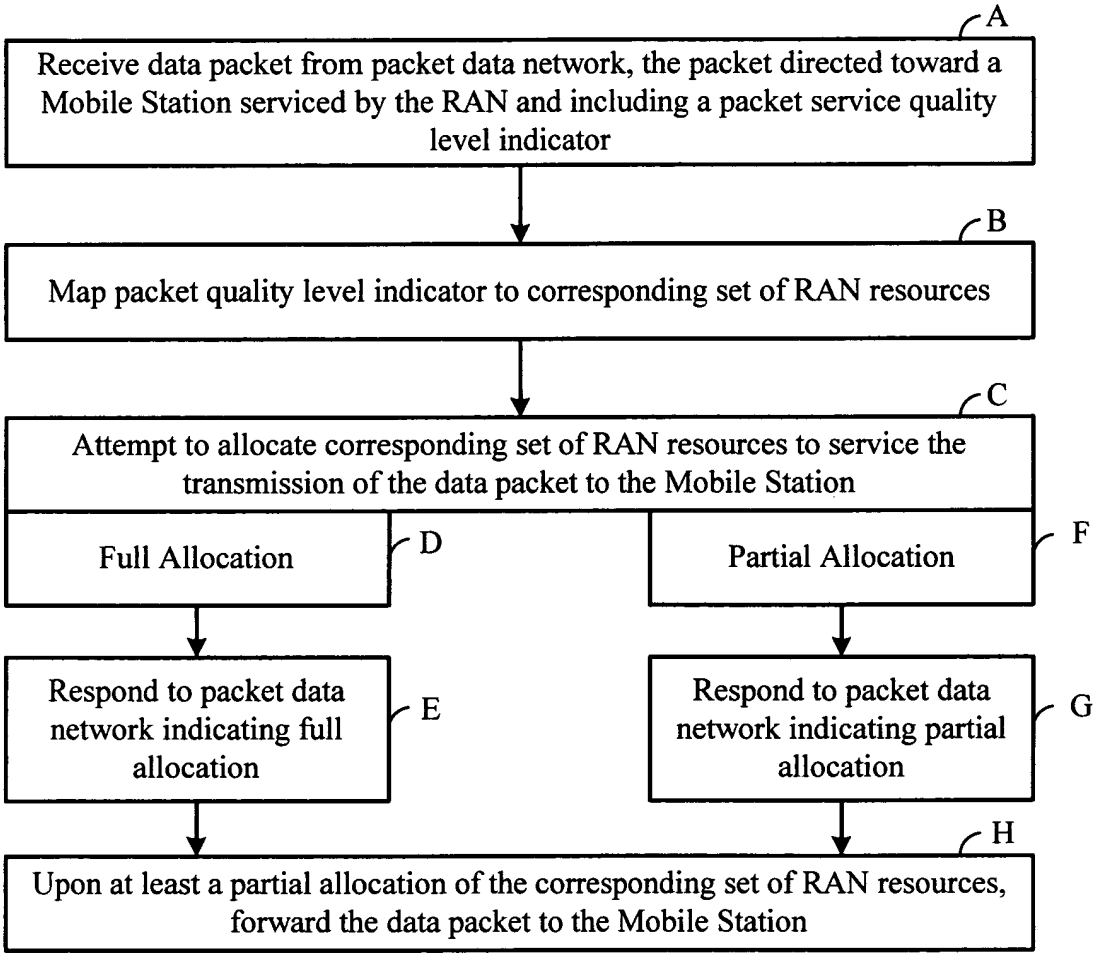


FIG. 1 - Elements of Independent Claim 1

Independent claim 1 is directed to a method for managing a Radio Access Network (RAN) to service forward link packet data transmissions. With particular reference to FIG. 1 and the language of independent claim 1, the RAN receives a data packet from a packet data network that is intended for a Mobile Station (MS) serviced by

the RAN and that includes a packet service quality level indicator (Step A). The RAN maps the packet service quality level indicator to a corresponding set of RAN resources (Step B). The RAN then attempts to allocate the corresponding set of RAN resources to service the transmission of the data packet to the MS (Step C). Upon a partial allocation of the corresponding set of RAN resources (Step F), the RAN responds to the packet data network indicating the partial allocation (Step G). Upon a full allocation of the corresponding set of RAN resources (step D), the RAN responds to the packet data network indicating the full allocation (Step E). Further, upon at least a partial allocation of the corresponding set of RAN resources, the RAN forwards the data packet to the MS (step H).

Independent claims 14, 30, 35, 42, 45, and 46 are related to independent claim 1 as follows:

- Independent claim 14 is directed to a Packet Data Serving Node (PDSN) that interacts with the RAN and performs operations consistent with the limitations of independent claim 1.
- Independent claim 30 is directed to a Base Station Controller (BSC) that interacts with the RAN and performs operations consistent with the limitations of independent claim 1.
- Independent claim 36 is directed to a Packet Control Function (PCF) that interacts with the RAN and performs operations consistent with the limitations of independent claim 1.
- Independent claim 42 is directed to a computer readable medium having instructions that, upon execution, cause a PDSN to perform the operations of independent claim 1.

- Independent claim 45 is directed to a computer readable medium having instructions that, upon execution, cause a BSC to perform the operations of independent claim 1.
- Independent claim 46 is directed to a computer readable medium having instructions that, upon execution, cause a PCF to perform the operations of independent claim 1.

Independent claim 9

The elements of independent claim 9 are illustrated in FIG. 2.

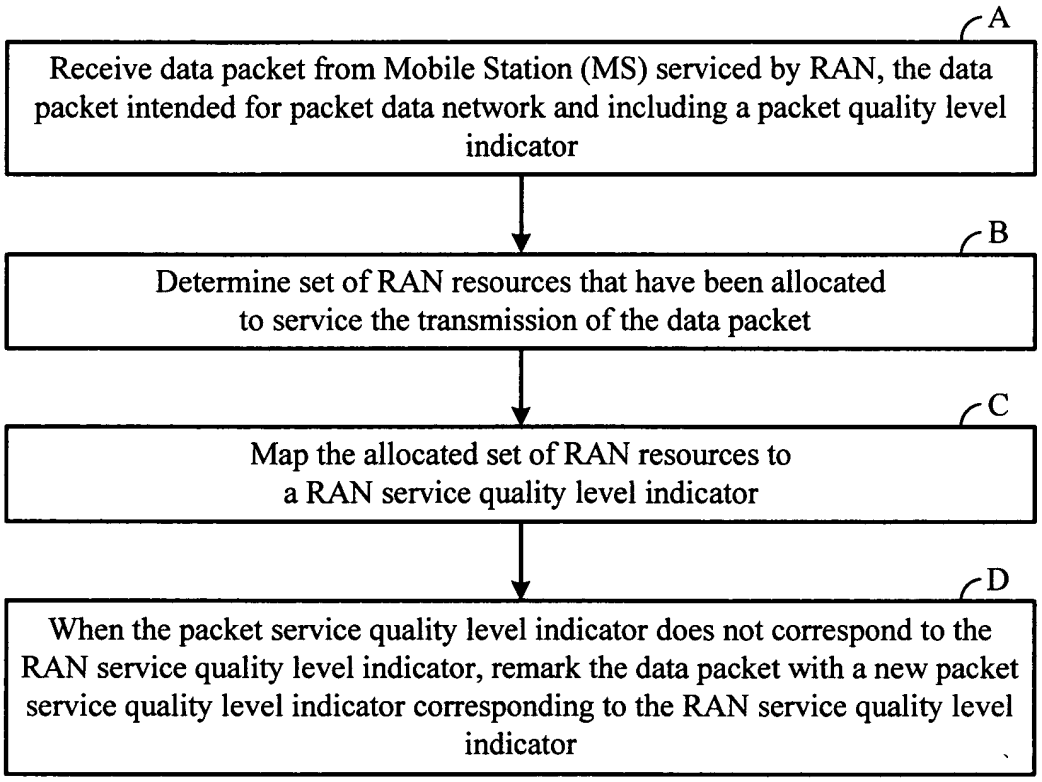


FIG. 2 - Elements of Independent Claim 9

Independent claim 9 is directed to a method for managing a RAN to service reverse link packet data transmissions. With particular reference to FIG. 2 and the language of independent claim 9, the RAN receives a data packet from a Mobile Station (MS) serviced by the RAN (step A). The RAN then determines a set of RAN resources that have been allocated to service the transmission of the data packet (Step B). The RAN maps

the allocated set of RAN resources to a RAN service quality level indicator (step C). When the packet service quality level indicator does not correspond to the RAN service quality level indicator, the RAN remarks the data packet with a new packet service quality level indicator corresponding to the RAN service quality level indicator (step D).

Independent claims 20, 43, and 44

The elements of independent claim 20 are illustrated in FIG. 3.

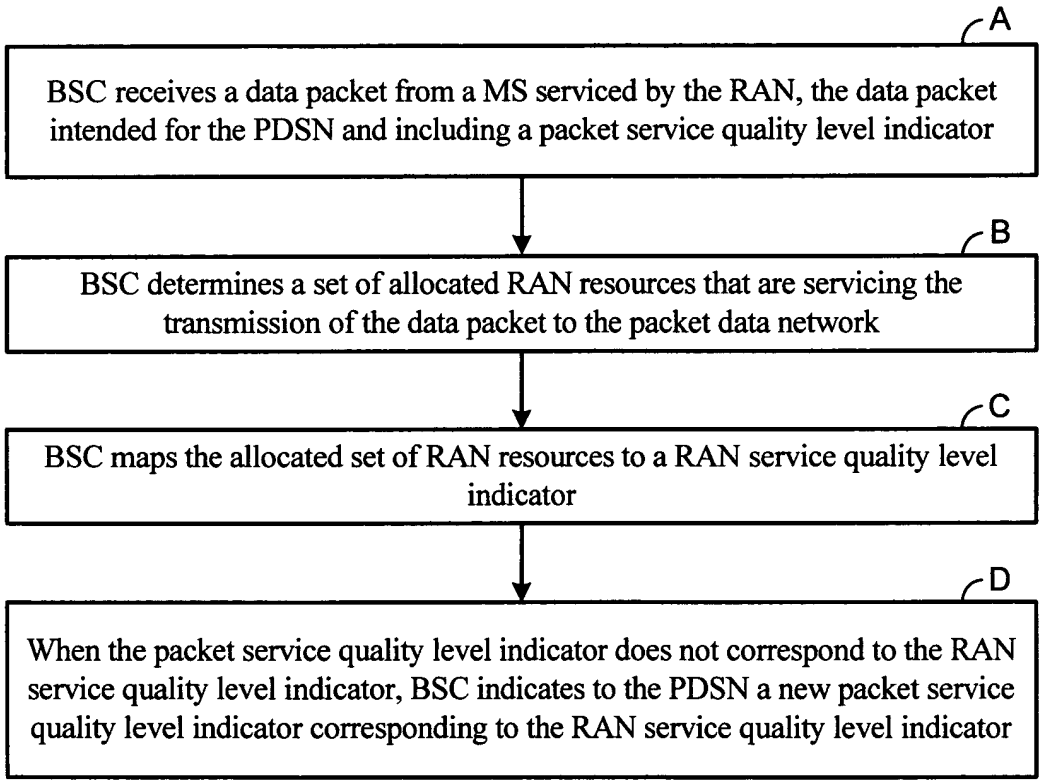


FIG. 3 - Elements of Independent Claim 20

Independent claim 20 is directed to a BSC that operates in conjunction with other components of the RAN to service a MS. The BSC includes a processor, memory, a first interface that couples the BSC to the PDSN, and a second interface that couples the BSC to remaining portions of the RAN. The BSC is operable to execute software instructions that cause the BSC to execute operations consistent with FIG. 3. With particular

reference to FIG. 3 and the language of independent claim 20, in its operations the BSC receives a data packet from a MS serviced by the RAN, the data packet intended for the PDSN and including a packet service quality level indicator (step A). The BSC then determines a set of allocated RAN resources that are servicing the transmission of the data packet to the packet data network (step B). Then, BSC maps the allocated set of RAN resources to a RAN service quality level indicator (step C). Finally, the BSC, when the packet service quality level indicator does not correspond to the RAN service quality level indicator, indicates to the PDSN a new packet service quality level indicator corresponding to the RAN service quality level indicator (step D).

Independent claims 25, 43, and 44 are related to independent claim 20 as follows:

- Independent claim 25 is directed to a Packet Control Function (PCF) that performs operations consistent with the operational limitations of the BSC of independent claim 20.
- Independent claim 43 is directed to a computer readable medium having instructions that, upon execution, cause a BSC to perform operations consistent with the operational limitations of the BSC of independent claim 20.
- Independent claim 44 is directed to a computer readable medium having instructions that, upon execution, cause a PCF to perform operations consistent with the operational limitations of the BSC of independent claim 20.

E. Grounds of rejection to be reviewed on appeal

The applicants contend that:

1. Claims 1-13, 14-29, and 42-44 are not unpatentable under 35 U.S.C. 103(a) over Willars (U.S. Patent No. 6,507,567) in view of Garner (U.S. Patent No. 6,542,739).

2. Claims 30-41 and 45-46 are no unpatentable under 35 U.S.C. 103(a) over Willars (U.S. Patent No. 6,507,567) and Garner (U.S. Patent No. 6,542,739) in view of Einola et al. (U.S. Patent No. 6,438,370, "Einola").

3. Claims 30-41 and 45-46 are not unpatentable under 35 U.S.C. 103(a) as being over Willars (U.S. Patent No. 6,507,567) and Garner (U.S. Patent No. 6,542,739) in view of Einola et al. (U.S. Patent No. 6,438,370, "Einola").

F. Argument:

i. The rejected claims DO NOT stand or fall together.

In the Examiner's Answer, the Examiner states that "[t]he rejection of claims 1-46 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7)." Such characterization of the Applicant's Brief is incorrect. As set forth in the Rules of Practice Before the Board of Patent Appeals and Interferences (Final Rule), 69 Fed. Reg. 49959 (August 12, 2004), effective September 13, 2004, grouping of claims is no longer required. Thus, the pending claims do not stand or fall together and the patentability of such is required to be separately considered.

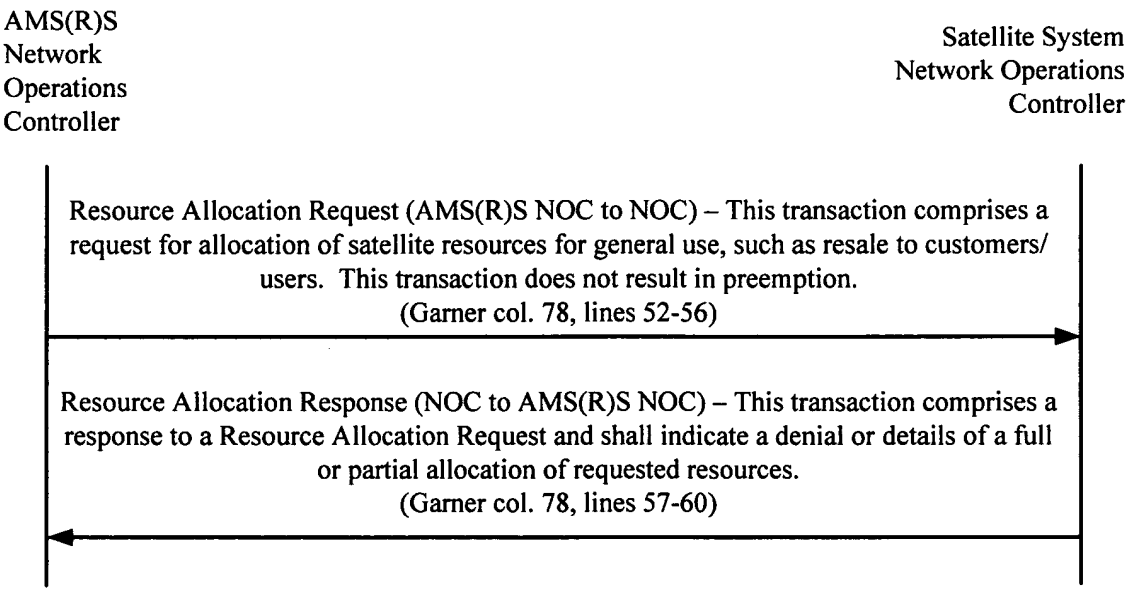
ii. Claims 1-8, 14-19, and 42 are not unpatentable over Willars in view of Garner

Willars is directed to the allocation (and deallocation) of RAN (UTRAN for UMTS Terrestrial RAN) resources in order to meet a desired Quality of Service (QoS) requirement (Col. 2, line 13 et seq.). Willars describes various techniques for such allocation (and deallocation). Willars fails to address interaction between the RAN and a Packet Data Service Node (PDSN) when RAN resource allocation is only partially available (limitations of independent claim 1 corresponding to step G of FIG. 1 above). The Final Office Action mailed July 12, 2004 concedes that Willars fails to meet this limitation of independent claim 1 and cites Garner as meeting this limitation.

Garner discloses a satellite communication system that interfaces to a number of entities. These entities are required to access the satellite system for various purposes. (See FIG. 3 and related text at col. 2, line 59 to col. 3, line 67) One entity that may require access to the satellite communication system is the Aeronautical Mobile Satellite

(R) Service [AMS(R)S] system. "The AMS(R)S system requires special protection because of the safety aspects of its use. AMS(R)S using the satellites will be managed as an independent network, with its own control system managing real-time access to its radio channels and GESs. These AMS(R)S radio channels are assigned to frequencies that are not typically shared with or frequency reused by other MSS carriers operating in other networks using the satellites. This segregation of frequencies, although not required, minimizes the changes for interference to AMS(R)S and simplify [sic] the operations of the system as a whole." (Garner col. 77, lines 9-20).

The Examiner cites particular teachings of Garner as meeting the shortcomings of Willars (Step G of FIG. 1, above). This particular aspect of Garner is illustrated further in FIG. 4, below.



With Garner, the AMS(R)S Network Operations Controller (NOC) requests an **allocation of satellite system resources for general use** via interaction with the NOC of the satellite system. Independent claim 1 is directed to the allocation of RAN resources

to service the **transmission of a data packet to the mobile station**. According to independent claim 1, RAN resources are fully allocated, partially allocated, or not allocated only to service **the transmission of the data packet**. Garner discloses the allocation of satellite system resources for **general use**. These teaching of Garner cannot be properly equivalenced with the **allocation of RAN resources to service the transmission of a data packet to a mobile station**, the **partial allocation of resources to service the transmission of the data packet**, and the **reporting of such partial allocation** as required by independent claim 1. Thus, Garner fails to meet the shortcomings of Willars and independent claim 1 is not unpatentable over Willars in view of Garner. Claims 2-8 depend from independent claim 1 and are not unpatentable over Willars in view of Garner for these same reasons.

Independent claim 14 is directed to a Packet Data Serving Node (PDSN) that interacts with the RAN and performs operations consistent with the limitations of independent claim 1. For the reasons provided above, independent claim 14 is not unpatentable over Willars in view of Garner. Claims 15-19 depend from independent claim 14 and are not unpatentable over Willars in view of Garner for these same reasons.

Independent claim 42 is directed to a computer readable medium having instructions that cause a PDSN 114 to perform the operations of independent claim 1. For the reasons provided above, independent claim 42 is not unpatentable over Willars in view of Garner.

iii. Claims 30-41 and 45-46 are not unpatentable over Willars and Garner in view of Einola

Einola is cited for teaching "a method where BSC indicates to the SGSN/PDSN the unsuccessful allocation of resources. See col. 11, lines 35-46." (Examiner's Answer at page 10, lines 16-17, Final Office Action at page 9, lines 13-14).

Independent claim 30 is directed to a Base Station Controller (BSC) that interacts with the RAN and **performs operations consistent with the limitations of independent claim 1** (e.g.., mapping a quality level indicator to a set of RAN resources, attending to RAN resource allocation, etc.) . As argued above, independent claim 1 is not unpatentable over Willars in view of Garner. Einola fails to meet the shortcomings of Willars and Garner relating to reporting of a partial allocation of RAN resources as required by independent claim 30 and as described above with reference to FIG. 1, element G. For these reasons, independent claim 30, and claims 31-35 that depend therefrom, are not unpatentable over Willars and Garner in view of Einola.

Independent claim 36 is directed to a Packet Control Function (PCF) that interacts with the RAN and that **performs operations consistent with the limitations of independent claim 1**. For the reasons cited above with reference to independent claim 30, independent claim 36, and claims 37-41 that depend therefrom, are not unpatentable over Willars and Garner in view of Einola.

Independent claim 45 is directed to a computer readable medium having instructions that, upon execution, cause a BSC 110 to **perform the operations of independent claim 1**. For the reasons cited above with reference to independent claim 30, independent claim 45 is not unpatentable over Willars and Garner in view of Einola.

Independent claim 46 is directed to a computer readable medium having instructions that, upon execution, cause a PCF 111A or 111B to perform the operations of independent claim 1. For the reasons cited above with reference to independent claim 30, independent claim 46 is not unpatentable over Willars and Garner in view of Einola.

iv. Claims 9-13 are not unpatentable over Willars in view of Garner

As described above with reference to FIG. 2, independent claim 9 requires: (1) receiving a data packet from a Mobile Station (MS) serviced by the RAN; (2) determining a set of RAN resources that have been allocated to service the transmission of the data packet; (3) mapping the allocated set of RAN resources to a RAN service quality level indicator; and (4) when the packet service quality level indicator does not correspond to the RAN service quality level indicator, **remarking the data packet with a new packet service quality level indicator corresponding to the RAN service quality level indicator**.

The Examiner cites Willars as meeting these limitations. Applicants respectfully traverse this assertion. Both Willars and Garner fail to disclose, suggest, or even address: when the packet service quality level indicator does not correspond to the RAN service quality level indicator, remark the data packet with a new packet service quality level indicator corresponding to the RAN service quality level indicator as is required by independent 9. Claims 10-13 depend from claim 9. Thus, claims 9-13 are not unpatentable over Willars in view of Garner.

iv. Claims 20-29 and 43-44 are not unpatentable over Willars in view of Garner

As described above with reference to FIG. 3, independent claim 20 is directed to a Base Station Controller (BSC) that (1) receives a data packet from a Mobile Station (MS) serviced by the RAN, (2) determines a set of allocated RAN resources that are servicing the transmission of the data packet to the packet data network; (3) maps the allocated set of RAN resources to a RAN service quality level indicator; and (4) **when the packet service quality level indicator does not correspond to the RAN service quality level indicator, the BSC indicates to the PDSN a new packet service quality level indicator corresponding to the RAN service quality level indicator.**

Willars **fails to disclose**, among other things, for packets received from a MS, (a) **mapping allocated RAN resources to a RAN service quality level indicator**; and (b) **indicating to the PDSN a new packet service quality level indicator corresponding to the RAN service quality level indicator** as required by independent claim 20. Garner fails to meet these shortcomings of Willars. Thus, independent claim 20 is not unpatentable over Willars in view of Garner. Claims 21-24 depend from independent claim 1 and are also not unpatentable over Willars in view of Garner.

Independent claim 25 is directed to a Packet Control Function (PCF) that performs operations similar to/same as the operations performed by the BSC of independent claim 20. Claims 26-29 depend from claim 25. For the reasons cited above, claims 25-29 are not unpatentable over Willars in view of Garner.

Independent claim 43 is directed to a computer readable medium having instructions that, upon execution, cause a BSC 110 to perform the operations of independent claim 20. For the reasons cited above, independent claim 43 is not

unpatentable over Willars in view of Garner.

Independent claim 44 is directed to a computer readable medium having instructions that, upon execution, cause a PCF 111A or 111B to perform the operations of independent claim 20. For the reasons cited above, independent claim 44 is not unpatentable over Willars in view of Garner.

G. Conclusions

For the above-provided reasons, the Appellants respectfully request that all of the rejections of the Final Office Action be overturned and that the claims in the present application be allowed to issue.

RESPECTFULLY SUBMITTED,

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37 C.F.R 1.8

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May 6, 2005
Date

_____
Signature

H. Claims Appendix

1. (previously presented) A method for managing Radio Access Network (RAN) resources to service forward link packet data transmissions, the method comprising:

receiving a data packet from a packet data network, the data packet directed toward a Mobile Station (MS) serviced by the RAN and including a packet service quality level indicator;

mapping the packet service quality level indicator to a corresponding set of RAN resources;

attempting to allocate the corresponding set of RAN resources to service the transmission of the data packet to the MS;

upon a partial allocation of the corresponding set of RAN resources, responding to the packet data network indicating the partial allocation;

upon a full allocation of the corresponding set of RAN resources, responding to the packet data network indicating the full allocation; and

upon at least a partial allocation of the corresponding set of RAN resources, forwarding the data packet to the MS.

2. (original) The method of independent claim 1, further comprising, upon a partial allocation of the corresponding set of RAN resources remarking the data packet with a new packet service quality level indicator, the new packet service quality level indicator corresponding to the partial allocation of the corresponding set of RAN resources.

3. (original) The method of claim 2, further comprising:

receiving another data packet from the packet data network directed toward the MS that includes the packet service quality level indicator; and

remarking the another data packet with the new packet service quality level indicator.

4. (original) The method of independent claim 1, wherein mapping the packet service quality level indicator to the corresponding set of RAN resources comprises:

determining that the packet service quality level indicator requires a specific performance level; and

determining a corresponding set of RAN resources that will satisfy the specific performance level.

5. (original) The method of independent claim 1, further comprising:

determining whether the corresponding set of RAN resources may be allocated to the MS; and

when the corresponding set of RAN resources may not be allocated to the MS, not attempting to allocate the full corresponding set of RAN resources.

6. (original) The method of independent claim 1, wherein mapping the packet service quality level indicator to the corresponding set of RAN resources comprises:

determining that the packet service quality level indicator requires a differential service level;

determining a plurality of sets of RAN resources supported for the MS; and

selecting a one of the plurality of sets of RAN resources supported for the MS that satisfies the differential service level.

7. (original) The method of independent claim 1, further comprising:

receiving another data packet from the packet data network directed toward the MS that includes a different packet service quality level indicator;

mapping the different packet service quality level indicator to a corresponding different set of RAN resources;

attempting to allocate the corresponding different set of RAN resources to the MS; and

upon an allocation of the corresponding different set of RAN resources, forwarding the data packet to the MS.

8. (original) The method of independent claim 1, further comprising notifying a Packet Data Servicing Node (PDSN) of a packet service quality level corresponding to an allocated set of RAN resources.

9. (original) A method for managing Radio Access Network (RAN) resources to service reverse link packet data transmissions, the method comprising:

receiving a data packet from a Mobile Station (MS) serviced by the RAN, the data packet intended for a coupled packet data network and including a packet service quality level indicator;

determining a set of RAN resources that have been allocated to service the

transmission of the data packet;

mapping the allocated set of RAN resources to a RAN service quality level indicator; and

when the packet service quality level indicator does not correspond to the RAN service quality level indicator, remarking the data packet with a new packet service quality level indicator corresponding to the RAN service quality level indicator.

10. (original) The method of claim 9, further comprising:

receiving another data packet from the MS intended for the coupled packet data network that includes the packet service quality level indicator; and

remarking the another data packet with the new packet service quality level indicator.

11. (original) The method of claim 9, wherein mapping the allocated set of RAN resources to the RAN service quality level indicator comprises:

determining that the packet service quality level indicator requires a specific performance level; and

determining a RAN service quality level indicator that maps to the specific performance level.

12. (original) The method of claim 9, wherein mapping the allocated set of RAN resources to the RAN service quality level indicator comprises:

determining that the packet service quality level indicator requires a differential

service level;

determining a RAN precedence level corresponding to the allocated set of RAN resources;

determining a plurality of RAN precedence levels supported for the MS; and

determining a differential RAN service quality level indicator that corresponds to the allocated set of RAN resources.

13. (original) The method of claim 9, further comprising:

receiving another data packet from the MS serviced by the RAN, the another data packet intended for the coupled packet data network and including a different packet service quality level indicator;

determining a different set of allocated RAN resources that are servicing the transmission of the data packet to the packet data network;

mapping the different set of allocated RAN resources to a different RAN service quality level indicator; and

when the different packet service quality level indicator does not correspond to the different RAN service quality level indicator, remarking the another data packet with another packet service quality level indicator corresponding to the different RAN service quality level indicator.

14. (previously presented) A Packet Data Serving Node (PDSN) that interfaces a Radio Access Network (RAN) to a packet network, the PDSN comprising:

a processor coupled to a processor bus;

memory coupled to the processor via the processor bus;

a first interface coupled to the processor bus that interfaces the PDSN to the packet network;

a second interface coupled to the processor bus that interfaces the PDSN to the RAN; and

the memory storing a set of instructions executable by the processor, the set of instructions comprising:

a plurality of instructions that, upon execution by the processor, cause the PDSN to receive a data packet from the packet data network, the data packet directed toward a Mobile Station (MS) serviced by the RAN and including a packet service quality level indicator;

a plurality of instructions that, upon execution by the processor, cause the PDSN to interact with the RAN to map the packet service quality level indicator to a corresponding set of RAN resources;

a plurality of instructions that, upon execution by the processor, cause the PDSN to interact with the RAN in attempting to allocate the corresponding set of RAN resources to service the transmission of the data packet to the MS;

a plurality of instructions that, upon execution by the processor, cause the PDSN to, upon a partial allocation of the corresponding set of RAN resources, respond to the packet data network indicating the partial allocation;

a plurality of instructions that, upon execution by the processor, cause the PDSN to, upon a full allocation of the corresponding set of RAN resources, respond to the packet data network indicating the full allocation; and

a plurality of instructions that, upon execution by the processor, cause the PDSN to, upon at least a partial allocation of the corresponding set of RAN resources, forward the data packet to the MS via the RAN.

15. (original) The Packet Data Serving Node of independent claim 14, wherein the set of instructions further comprise a plurality of instructions that, upon execution by the processor, cause the PDSN to, upon a partial allocation of the corresponding set of RAN resources, remark the data packet with a new packet service quality level indicator, the new packet service quality level indicator corresponding to the partial allocation of the corresponding set of RAN resources.

16. (original) The Packet Data Serving Node of independent claim 15, wherein the set of instructions further comprise:

a plurality of instructions that, upon execution by the processor, cause the PDSN to receive another data packet from the packet data network directed toward the MS that includes the packet service quality level indicator; and

a plurality of instructions that, upon execution by the processor, cause the PDSN to remark the another data packet with the new packet service quality level indicator.

17. (original) The Packet Data Serving Node of independent claim 14, wherein

when the PDSN maps the packet service quality level indicator to the corresponding set of RAN resources:

the PDSN determines that the packet service quality level indicator requires a specific performance level; and

the PDSN determines that the corresponding set of RAN resources will satisfy the specific performance level.

18. (original) The Packet Data Serving Node of independent claim 14, wherein the set of instructions further comprise:

a plurality of instructions that, upon execution by the processor, cause the PDSN to determine whether a partial set of RAN resources has been allocated to the MS; and

a plurality of instructions that, upon execution by the processor, cause the PDSN to remark the data packet with a new packet service quality level indicator, the new packet service quality level indicator corresponding to the partial set of RAN resources that have been allocated to the MS.

19. (original) The Packet Data Serving Node of independent claim 14, wherein the set of instructions further comprise:

a plurality of instructions that, upon execution by the processor, cause the PDSN to receive another data packet from the packet data network directed toward the MS that includes a different packet service quality level indicator; and

a plurality of instructions that, upon execution by the processor, cause the

PDSN to interact with the RAN to map the different packet service quality level indicator to a corresponding different set of RAN resources.

20. (original) A Base Station Controller (BSC) operating in conjunction with other components of a Radio Access Network (RAN) and interfaced to a Packet Data Serving Node (PDSN), the Base Station Controller comprising:

a processor coupled to a processor bus;

memory coupled to the processor via the processor bus;

a first interface coupled to the processor bus that interfaces the BSC to the PDSN;

a second interface coupled to the processor bus that interfaces the BSC to remaining portions of the RAN; and

the memory storing a set of instructions executable by the processor, the set of instructions comprising:

a plurality of instructions that, upon execution by the processor, cause the BSC to receive a data packet from a Mobile Station (MS) serviced by the RAN, the data packet intended for the PDSN and including a packet service quality level indicator;

a plurality of instructions that, upon execution by the processor, cause the BSC to determine a set of allocated RAN resources that are servicing the transmission of the data packet to the packet data network;

a plurality of instructions that, upon execution by the processor, cause the BSC to map the allocated set of RAN resources to a RAN service quality level indicator; and

a plurality of instructions that, upon execution by the processor, cause the

BSC to, when the packet service quality level indicator does not correspond to the RAN service quality level indicator, indicate to the PDSN a new packet service quality level indicator corresponding to the RAN service quality level indicator.

21. (original) The Base Station Controller of claim 20, the set of instructions further comprising:

a plurality of instructions that, upon execution by the processor, cause the BSC to receive another data packet from the MS intended for the PDSN that includes the packet service quality level indicator; and

a plurality of instructions that, upon execution by the processor, cause the BSC to indicate to the PDSN the new packet service quality level indicator.

22. (original) The Base Station Controller of claim 20, wherein in mapping the allocated set of RAN resources to a RAN service quality level indicator, the Base Station Controller:

determines that the packet service quality level indicator requires a specific performance level; and

determines a RAN service quality level indicator that maps exactly to the allocated set of RAN resources.

23. (original) The Base Station Controller of claim 20, wherein in mapping the allocated set of RAN resources to a RAN service quality level indicator, the BSC:

determines that the packet service quality level indicator requires a differential

service level;

determines a RAN precedence level corresponding to the allocated set of RAN resources;

determines a plurality of RAN precedence levels supported for the MS; and

determines a differential packet service quality level indicator that corresponds to the allocated set of RAN resources.

24. (original) The Base Station Controller of claim 20, the set of instructions further comprising:

a plurality of instructions that, upon execution by the processor, cause the BSC to respond to the PDSN servicing the data packet with an indication of a packet service quality level supported by the RAN.

25. (original) A Packet Control Function (PCF) interfaced to a Base Station Controller (BSC) that operates in conjunction with other components of a Radio Access Network (RAN) and that interfaces to a Packet Data Serving Node (PDSN), the Packet Control Function comprising:

a processor coupled to a processor bus;

memory coupled to the processor via the processor bus;

a first interface coupled to the processor bus that interfaces the PCF to the BSC;

a second interface coupled to the processor bus that interfaces the PCF to the PDSN; and

the memory storing a set of instructions executable by the processor, the set of

instructions comprising:

a plurality of instructions that, upon execution by the processor, cause the PCF to receive a data packet from a Mobile Station (MS) serviced by the RAN, the data packet intended for the PDSN and including a packet service quality level indicator;

a plurality of instructions that, upon execution by the processor, cause the PCF to determine a set of allocated RAN resources that are servicing the transmission of the data packet to the packet data network;

a plurality of instructions that, upon execution by the processor, cause the PCF to map the allocated set of RAN resources to a RAN service quality level indicator; and

a plurality of instructions that, upon execution by the processor, cause the PCF to, when the packet service quality level indicator does not correspond to the RAN service quality level indicator, indicate to the PDSN a new packet service quality level indicator corresponding to the RAN service quality level indicator.

26. (original) The Packet Control Function of claim 25, the set of instructions further comprising:

a plurality of instructions that, upon execution by the processor, cause the PCF to receive another data packet from the MS intended for the PDSN that includes the packet service quality level indicator; and

a plurality of instructions that, upon execution by the processor, cause the PCF to indicate to the PDSN the new packet service quality level indicator.

27. (original) The Packet Control Function of claim 25, wherein in mapping the

allocated set of RAN resources to a RAN service quality level indicator, the Packet Control Function:

determines that the new packet service quality level indicator requires a specific performance level; and

determines a service quality level indicator that maps exactly to the allocated set of RAN resources.

28. (original) The Packet Control Function of claim 25, wherein in mapping the allocated set of RAN resources to a RAN service quality level indicator, the Packet Control Function:

determines that the packet service quality level indicator requires a differential service level;

determines a RAN precedence level corresponding to the allocated set of RAN resources;

determines a plurality of RAN precedence levels supported for the MS; and

determines a differential RAN service quality level indicator that corresponds to the allocated set of RAN resources.

29 (original) The Packet Control Function of claim 25, the set of instructions further comprising:

a plurality of instructions that, upon execution by the processor, cause the PCF to respond to the PDSN servicing the data packet with an indication of a packet service quality level supported by the RAN.

30. (previously presented) A Base Station Controller (BSC) operating in conjunction with other components of a Radio Access Network (RAN) and interfaced to a Packet Data Serving Node (PDSN), the Base Station Controller comprising:

a processor coupled to a processor bus;

memory coupled to the processor via the processor bus;

a first interface coupled to the processor bus that interfaces the BSC to the PDSN;

a second interface coupled to the processor bus that interfaces the BSC to remaining portions of the RAN; and

the memory storing a set of instructions executable by the processor, the set of instructions comprising:

a plurality of instructions that, upon execution by the processor, cause the BSC to receive a request from the PDSN to service packet data transmissions from the PDSN to a MS at a packet service quality level indicator;

a plurality of instructions that, upon execution by the processor, cause the BSC to determine a set of RAN resources that would satisfy the packet service quality level indicator;

a plurality of instructions that, upon execution by the processor, cause the BSC to attempt to allocate the set of RAN resources that would satisfy the packet service quality level;

a plurality of instructions that, upon execution by the processor, cause the BSC to, upon a partial allocation of the corresponding set of RAN resources, respond to the PDSN indicating the partial allocation; and

a plurality of instructions that, upon execution by the processor, cause the BSC to, upon a full allocation of the corresponding set of RAN resources, respond to the PDSN indicating the full allocation.

31. (original) The Base Station Controller of claim 30, the set of instructions further comprising:

a plurality of instructions that, upon execution by the processor, cause the BSC to, upon a full allocation of the corresponding set of RAN resources, to indicate to the PDSN that the packet service quality level indicator corresponding is met.

32. (original) The Base Station Controller of claim 30, the set of instructions further comprising:

a plurality of instructions that, upon execution by the processor, cause the BSC to, upon a partial allocation of the corresponding set of RAN resources, to indicate to the PDSN that the packet service quality level indicator corresponding is partially met.

33. (original) The Base Station Controller of claim 30, the set of instructions further comprising:

a plurality of instructions that, upon execution by the processor, cause the BSC to, upon a failed allocation of the corresponding set of RAN resources, to indicate to the PDSN that the allocation of RAN resources has failed.

34. (original) The Base Station Controller of claim 30, wherein in mapping the

allocated set of RAN resources to a RAN service quality level indicator, the Base Station Controller:

determines that the packet service quality level indicator requires a specific performance level; and

determines a RAN service quality level indicator that maps exactly to the allocated set of RAN resources.

35. (original) The Base Station Controller of claim 30, wherein in mapping the allocated set of RAN resources to a RAN service quality level indicator, the Base Station Controller:

determines that the packet service quality level indicator requires a differential service level;

determines a RAN precedence level corresponding to the allocated set of RAN resources;

determines a plurality of RAN precedence levels supported for the MS; and

determines a differential packet service quality level indicator that corresponds to the allocated set of RAN resources.

36. (previously presented) A Packet Control Function (PCF) interfaced to a Base Station Controller (BSC) that operates in conjunction with other components of a Radio Access Network (RAN) and that interfaces to a Packet Data Serving Node (PDSN), the Packet Control Function comprising:

a processor coupled to a processor bus;

memory coupled to the processor via the processor bus;

a first interface coupled to the processor bus that interfaces the PCF to the BSC;

a second interface coupled to the processor bus that interfaces the PCF to the PDSN; and

the memory storing a set of instructions executable by the processor, the set of instructions comprising:

a plurality of instructions that, upon execution by the processor, cause the PCF to receive a request from the PDSN to service packet data transmissions from the PDSN to a MS at a packet service quality level indicator;

a plurality of instructions that, upon execution by the processor, cause the PCF to determine a set of RAN resources that would satisfy the packet service quality level indicator;

a plurality of instructions that, upon execution by the processor, cause the PCF to attempt to allocate the set of RAN resources that would satisfy the packet service quality level;

a plurality of instructions that, upon execution by the processor, cause the PCF to, upon a partial allocation of the corresponding set of RAN resources, respond to the PDSN indicating the partial allocation; and

a plurality of instructions that, upon execution by the processor, cause the PCF to, upon a full allocation of the corresponding set of RAN resources, respond to the PDSN indicating the full allocation.

37. (original) The Packet Control Function of claim 36, the set of instructions further comprising:

a plurality of instructions that, upon execution by the processor, cause the PCF to, upon a full allocation of the corresponding set of RAN resources, to indicate to the PDSN that the packet service quality level indicator corresponding is met.

38. (original) The Packet Control Function of claim 36, the set of instructions further comprising:

a plurality of instructions that, upon execution by the processor, cause the PCF to, upon a partial allocation of the corresponding set of RAN resources, to indicate to the PDSN that the packet service quality level indicator corresponding is partially met.

39. (original) The Packet Control Function of claim 36, the set of instructions further comprising:

a plurality of instructions that, upon execution by the processor, cause the PCF to, upon a failed allocation of the corresponding set of RAN resources, to indicate to the PDSN that the allocation of RAN resources has failed.

40. (original) The Packet Control Function of claim 36, wherein in mapping the

allocated set of RAN resources to a RAN service quality level indicator, the Packet Control Function:

determines that the packet service quality level indicator requires a specific performance level; and

determines a RAN service quality level indicator that maps exactly to the allocated set of RAN resources.

41. (original) The Packet Control Function of claim 36, wherein in mapping the allocated set of RAN resources to a RAN service quality level indicator, the Packet Control Function:

determines that the packet service quality level indicator requires a differential service level;

determines a RAN precedence level corresponding to the allocated set of RAN resources;

determines a plurality of RAN precedence levels supported for the MS; and

determines a differential packet service quality level indicator that corresponds to the allocated set of RAN resources.

42. (previously presented) A computer readable medium that stores a plurality of software instructions for execution by a Packet Data Serving Node (PDSN) that interfaces a Radio Access Network (RAN) to a packet network, the computer readable medium comprising:

a plurality of instructions that, upon execution by the PDSN, cause the PDSN to receive a data packet from the packet data network, the data packet directed toward a Mobile Station (MS) serviced by the RAN and including a packet service quality level indicator;

a plurality of instructions that, upon execution by the PDSN, cause the PDSN to interact with the RAN to map the packet service quality level indicator to a corresponding set of RAN resources;

a plurality of instructions that, upon execution by the PDSN, cause the PDSN to interact with the RAN in attempting to allocate the corresponding set of RAN resources to service the transmission of the data packet to the MS;

a plurality of instructions that, upon execution by the PDSN, cause the PDSN to, upon a partial allocation of the corresponding set of RAN resources, respond to the packet data network indicating the partial allocation;

a plurality of instructions that, upon execution by the PDSN, cause the PDSN to, upon a full allocation of the corresponding set of RAN resources, respond to the packet data network indicating the full allocation; and

a plurality of instructions that, upon execution by the PDSN, cause the PDSN to, upon an allocation of the corresponding set of RAN resources, forward the data packet to the MS via the RAN.

43. (original) A computer readable medium that stores a plurality of software instructions for execution by a Base Station Controller (BSC) operating in conjunction with other components of a Radio Access Network (RAN) and interfaced to a Packet Data Serving Node (PDSN), the computer readable medium comprising:

a plurality of instructions that, upon execution by the BSC, cause the BSC to receive a data packet from a Mobile Station (MS) serviced by the RAN, the data packet intended for the PDSN and including a packet service quality level indicator;

a plurality of instructions that, upon execution by the BSC, cause the BSC to determine a set of allocated RAN resources that are servicing the transmission of the data packet to the packet data network;

a plurality of instructions that, upon execution by the BSC, cause the BSC to map the allocated set of RAN resources to a RAN service quality level indicator; and

a plurality of instructions that, upon execution by the BSC, cause the BSC to, when the packet service quality level indicator does not correspond to the RAN service quality level indicator, indicate to the PDSN a new packet service quality level indicator corresponding to the RAN service quality level indicator.

44. (original) A computer readable medium that stores a plurality of software instructions for execution by a Packet Control Function (PCF) interfaced to a Base Station Controller (BSC) that operates in conjunction with other components of a Radio Access Network (RAN) and that interfaces to a Packet Data Serving Node (PDSN), the computer readable medium comprising:

a plurality of instructions that, upon execution by the processor, cause the PCF to receive a data packet from a Mobile Station (MS) serviced by the RAN, the data packet intended for the PDSN and including a packet service quality level indicator;

a plurality of instructions that, upon execution by the PCF, cause the PCF to determine a set of allocated RAN resources that are servicing the transmission of the data packet to the packet data network;

a plurality of instructions that, upon execution by the PCF, cause the PCF to map the allocated set of RAN resources to a RAN service quality level indicator; and

a plurality of instructions that, upon execution by the PCF, cause the PCF to, when the packet service quality level indicator does not correspond to the RAN service quality level indicator, indicate to the PDSN a new packet service quality level indicator corresponding to the RAN service quality level indicator.

45. (previously presented) A computer readable medium that stores a plurality of software instructions for execution by a Base Station Controller (BSC) operating in conjunction with other components of a Radio Access Network (RAN) and interfaced to a Packet Data Serving Node (PDSN), the computer readable medium comprising:

a plurality of instructions that, upon execution by the BSC, cause the BSC to receive a request from the PDSN to service packet data transmissions from the PDSN to a MS at a packet service quality level indicator;

a plurality of instructions that, upon execution by the BSC, cause the BSC to determine a set of RAN resources that would satisfy the packet service quality level indicator;

a plurality of instructions that, upon execution by the BSC, cause the BSC to attempt to allocate the set of RAN resources that would satisfy the packet service quality level;

a plurality of instructions that, upon execution by the BSC, cause the BSC to, upon a partial allocation of the corresponding set of RAN resources, respond to the PDSN indicating the partial allocation; and

a plurality of instructions that, upon execution by the BSC, cause the BSC to, upon a full allocation of the corresponding set of RAN resources, respond to the PDSN indicating the full allocation.

46. (previously presented) A computer readable medium that stores a plurality of software instructions for execution by a Packet Control Function (PCF) interfaced to a Base Station Controller (BSC) that operates in conjunction with other components of a Radio Access Network (RAN) and that interfaces to a Packet Data Serving Node (PDSN), the computer readable medium comprising:

a plurality of instructions that, upon execution by the PCF, cause the PCF to receive a request from the PDSN to service packet data transmissions from the PDSN to a MS at a packet service quality level indicator;

a plurality of instructions that, upon execution by the PCF, cause the PCF to determine a set of RAN resources that would satisfy the packet service quality level indicator;

a plurality of instructions that, upon execution by the PCF, cause the PCF to attempt to allocate the set of RAN resources that would satisfy the packet service quality level; ~~and~~

a plurality of instructions that, upon execution by the BSC, cause the BSC to, upon a partial allocation of the corresponding set of RAN resources, respond to the PDSN indicating the partial allocation; and

a plurality of instructions that, upon execution by the BSC, cause the BSC to, upon a full allocation of the corresponding set of RAN resources, respond to the PDSN indicating the full allocation.